DOCUMENT RESUME

ED 358 102 TM 019 868

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TITLE	Tables of Critical Values for Testing Clinical Hypotheses.
PUB DATE	Apr 93
NOTE	30p.; Paper presented at the Annual Meeting of the American Educational Research Association (Atlanta, GA, April 12-16, 1993).
PUB TYPE	Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Classification; *Clinical Diagnosis; *Counseling; Counselors; Cutting Scores; Decision Making; Educational Diagnosis; Evaluation Criteria; Groups; *Hypothesis Testing; Predictor Variables; Statistical Distributions; *Tables (Data); *Test Use; Training
IDENTIFIERS	Criterion Based Selection; Dichotomous Variables

ABSTRACT

Tables for testing clinical hypotheses about counseling clients are presented, and their use is described. Primary uses are determining a critical value or cutoff score on a predictor that can be used to classify an individual as a member of a clinical group, and instructing those unfamiliar with the limitations of tests about the conditions under which tests are inadequate for classifying individuals. The researcher states as the initial clinical hypothesis that the client is not a member of a particular clinical group, and decides on the maximum probability of incorrectly classifying any individual into that group. Table 1 is used when the criterion variable is normally distributed. Table 2 is for use when the criterion variable is dichotomous. Once the appropriate table is selected, the researcher must select an alpha-level, the maximum probability of error that will be accepted when classifying any client as a member of a clinical group. Specific directions are given for the use of both tables. The use of the tables in training counselors is also described. These tables allow a quick survey of the circumstances under which tests have little or no practical value. In general, they provide a practical view of a test's ability to classify individuals for clinical purposes. A technical appendix explains how the tables were developed, and both tables are included. (SLD)

Tables of Critical Values for Testing Clinical Hypotheses

By

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A Paper Presented at the Annual Meeting of the
American Educational Research Association
Atlanta, 1993

The purpose of this paper is to disseminate and describe the use of tables for testing clinical hypotheses about counseling clients. The two primary uses for the tables are 1) determining a critical value, or cutoff score, on a predictor which can be used to classify an individual as a member of a clinical group, perhaps prior to commencing an intervention, and 2) instructing those unfamiliar with the limitations of tests as to the variety of conditions under which tests are inadequate to the task of classifying individuals.

Hummel (1990), in a paper on clinical hypothesis testing, has laid out a conceptual framework and method for using tests when making decisions about clients. This method is intended specifically for the situation where a counselor must choose a course of action to pursue with a client. This use of tests can be contrasted with their use in situations where the client must choose a course of action, such selecting a college, or where an organization must act, as when selecting candidates for a job.

Clinical hypothesis testing closely parallels the testing of statistical hypotheses. The counselor states the initial clinical hypothesis that a client is *not* a member of a particular clinical group and decides on the maximum probability of incorrectly classifying any individual into that group. The counselor then needs to know the critical value on the predictor variable that would cause the initial clinical hypothesis to be rejected in favor of the alternative hypothesis that the client is a member of the clinical group. The critical value is a function of the relationship between the predictor variable and the criterion variable, the base rate of the clinical group, and the probability of misclassification which the counselor deems appropriate. This process is analogous to that followed in testing statistical hypotheses where one states a null hypothesis, such as $H_0:\mu_1=\mu_2$, sets an α-level, and then gets a critical value from, say, a table for the t distribution.

While the formulations underlying my presentation of clinical hypothesis testing were arrived at independently, there is no claim that they are unique. In this regard, the earlier work of Meehl and Rosen (1955) and Magnussen (1966) is acknowledged.

USING THE TABLES

You must first determine which table to use. You use Table 1 when the criterion variable is normally distributed. For example, depression may be assumed to be normally distributed in the population, with "Pollyannas" in the extreme left end of the distribution, the morbidly depressed in the extreme right end, and "normal" people in the center, where "normal" means those who get depressed sometimes, occasionally feel "blue" or "down in the dumps," but also can be happy, positive, and optimistic. You use Table 2 when the criterion variable is dichotomous. For example, those who have or have not committed suicide form a dichotomy, as do teenage girls who do or do not become pregnant or teenage boys who have or have not been convicted of a felony.

Once you have selected the appropriate table, you need to select an α-level. The α-level is the maximum probability of error you will accept when classifying any client as a

member of a clinical group. Let us assume that you accept the "physician's code" to first do no harm and that you initially assume that a client is normal. This means you must decide whether a client is a member of a clinical group before you will treat him or her as a member of that group. Next, imagining yourself sitting across from a client, determine the highest probability of error you would accept when classifying that client into a clinical group. This requires a consideration of the consequences of misclassification. For example, classifying a client as depressed and then treating him or her accordingly, when, in fact, he or she is not depressed, can obviously have negative consequences.

In each table, there is a separate page for each of eight α-levels, .01, .05, .10, .20, .25, .33, .40, .50. Once you have chosen a table and α-level, proceed to the appropriate page in the table and follow the steps given below for the table you have chosen.

Table 1: Normally distributed criteria:

1. Define the clinical group. You can think of the clinical group as being a proportion of people in the upper tail of the criterion distribution. This is the base rate, ϕ, of the clinical group. For example, you may define those in the top 10% of the depression distribution as being "depressed." Each table page has 16 major rows (with two minor rows in each major row). Go down the left-hand column headed with "ϕ and (z)" until you come to the proportion in the clinical group. For example, suppose you go down to .10. This places you in the sixth major row (9.71 is immediately to the right in the table.). The number in parentheses below the proportion in the clinical group (in row six it is 1.28) is the z-score which cuts off the upper ϕ proportion of the criterion distribution. For example, 1.28 cuts off the upper .10 proportion of the distribution. You may define the clinical group in terms of the number of standard deviations above the mean a client must be to be included. For example, the third major row in the table is for a clinical group defined as anyone beyond 2.00 standard deviations above the mean on the criterion.

2. Now that the appropriate row has been selected in step 1, select the appropriate column usin e correlation coefficient between the predictor and criterion. For example, if y u were predicting depression using Scale 2 on the MMPI, i.e., the D-Scale, and the correlation between this inventory scale and depression was .60, you would go to the eighth column of the table. With α=.25, ϕ=.10(z=1.28), and ρ_{xy}=.60, the critical value on the predictor is 3.04 (row 6, column 8). If a client who is 3.04 standard deviations above the mean on the MMPI D-Scale is classified as depressed, you will be wrong 25% of the time. The error rate, α, is the probability of error *at the critical value*. Clients with higher predictor scores will be less likely to be incorrectly classified in the clinical group. The number just underneath the critical value is the long run probability of misclassification. It is the proportion of those clients who score *at or above* the critical value who will be incorrectly classified in the clinical group. For example, the .192 just below 3.04 tells us that 19.2% of those clients who score at or above 3.04 standard deviations above the mean on the D-Scale will be incorrectly diagnosed as being depressed.

Table 1 assumes that the correlation between predictor and criterion is positive and that the clinical group is in the upper tail of the criterion distribution. If this is not the case, you may need to change the sign of the tabled critical value.

Table 2: Dichotomous criteria:

1. Determine the base rate, ϕ, of the clinical group. What proportion is the clinical population of the combined clinical and non-clinical populations? For example, if 6.7% of all widows attempt suicide, then the base rate for this clinical group would be .067. Each table page has 16 major rows (with two minor rows in each major row). Go down the left-hand column headed with "ϕ and (t)" until you come to the base rate for the clinical group. For example, suppose you go down to .067. This places you in the fifth major row (15.07 is immediately to the right in the table.). The number in parentheses below the base rate for the clinical group (in row five it is 14) is the number of times larger the non-clinical group is than the clinical group. For example, if the base rate is .067, then the non-clinical population is 14 times larger than the clinical group. You may enter the table with the base rate or the corresponding value of t. (The base rates in Table 2 are the same as those in Table 1.)

2. Determine the number of standard deviations that the clinical population mean is above the non-clinical population mean. (Clinical and non-clinical populations are assumed to have the same standard deviation.) For example, if you were using the MMPI D-Scale to predict whether widows would attempt suicide and you knew that on the average widows who attempt suicide score 1.75 standard deviations higher than those who do not, you would go to the eighth column of the table. With α=.25, ϕ=.10(t=14.0), and the clinical group mean being 1.75 standard deviations above the non-clinical group mean, the critical value on the predictor is 3.01 (row 5, column 7). If a client who is 3.01 standard deviations above the non-clinical mean on the MMPI D-Scale is classified as going to attempt suicide, you will be wrong 25% of the time. The error rate, α, is the probability of error *at the critical value*. Clients with higher predictor scores will be less likely to be incorrectly classified in the clinical group. The number just underneath the critical value is the long run probability of misclassification. It is the proportion of those clients who score *at or above* the critical value who will be incorrectly classified in the clinical group. For example, the .15 just below 3.01 tells us that 15% of those clients who score at or above 3.01 standard deviations above the non-clinical mean on the D-Scale will be incorrectly classified as going to attempt suicide.

   In Table 2, it is assumed that the mean of the clinical population is higher than the mean of non-clinical population. When this is not the case, you must change the sign of the tabled value.

   As mentioned in step 2, clinical and non-clinical populations are assumed to have equal standard deviations. The values in Table 2 could be quite inaccurate if this assumption

is violated. When the assumption is violated, you are advised to use the *Clinical Hypothesis Testing* program described by Hummel (1990). (See the Technical Appendix for a complete specification of the assumptions underlying the construction of the tables.)

General Considerations:

The tables are designed for use with standard scores. Therefore, you may need to transform to and from z-scores using the usual transformations, e.g., $z_x = \frac{X - \mu_x}{\sigma_x}$ and $X = \mu_x + \sigma_x z_x$. These transformations are analogous to the transformations required when using the standard normal distribution for hypothesis testing and confidence interval construction.

While the above discussion has been in terms of a single predictor variable, it applies equally well to a weighted sum of predictors. If a multiple regression analysis or linear discriminant analysis has resulted in a useful function, then the correlation between this function and the criterion, or alternatively, the number of standard deviations between groups on a standardized discriminant function, can be used in the same manner as a single predictor. As with all predictor situations, the relationships between predictors and criterion inspire more confidence when they have been cross validated.

In a number of places in the tables ***** appears. This occurs whenever the critical value immediately above the asterisks is greater than 5.00. The primary reason for this is that the bivariate numerical integration routine required for Table 1 is not sufficiently accurate to assess the exceedingly small probabilities that occur beyond 5 standard deviations. The chances of encountering a predictor score greater than five standard deviations above the mean is about 3 in 10 million, and therefore, critical values of this magnitude have no practical value.

Educational Uses:

As important, or perhaps even more important, than the clinical use of the tables is their use in training counselors. The tables allow you to survey quickly the circumstances where tests have little or no practical value. For example, suppose you believe it is impractical to administer a test when virtually no one tests positive, i.e., at or beyond the critical value on the predictor. For this reason, when using Table 1, situations requiring critical values greater than 2.58 might render tests impractical since only one half of one percent (.005) of the population would test positive. Further, you might know that you never want to sit across from a client, know his or her predictor score, and make a classification decision which you know will be wrong more than 25% of the time. If the clinical group comprises only 10% of the population, then you can easily see that you need a predictor which correlates at least .70 or higher with the criterion. Validity coefficients of this size are rare, especially for personality measures. By varying the probability of error, the size of the clinical group, and so on and observing the effect with respect to the

critical values and validity coefficients required, you begin to develop a feel for the usefulness of tests for making clinical predictions.

A generalization which is obvious in Table 1 is that, all other things being equal, as the correlation increases the critical value decreases. You might expect a similar relationship to hold in Table 2, namely, that as the number of standard deviations between the population means increases, the critical value would decrease. However, there are many circumstances where this is not the case in Table 2. These "counter intuitive" instances can be used as a basis for a discussion of the problems with "fixed" critical values. For example, if you always used two standard deviations above the mean as the critical value, as when considering 70 or above as an elevation on the MMPI, your classification errors *at the critical value* will start increasing as the clinical group's mean moves beyond two standard deviations from the non-clinical group's mean. This increase will continue as the separation between the groups increases, approaching 100% errors in the limit.

The preceding examples help to demonstrate the educational uses of the tables. Patterns and relationships revealed in the tables can add to discussions on the clinical use of tests and the caution that is often required.

CONCLUDING REMARKS

In a manner analogous to testing statistical hypotheses, testing clinical hypotheses introduces an element of conservatism into a diagnostic process. It can make it clear that highly statistically significant differences between groups or correlations between predictor and criterion can often fail to guarantee a test's utility for classifying individual clients into small clinical populations. On the other hand, when an adequate test is available, it enables one to be explicit about error rates. The tables provide an easy way to find the critical value which will control the probability of misclassification at a specified level.

In order to use the tables, one must find the required statistical information and criterion definitions in the testing literature or be willing to collect data and develop such information oneself. Some criterion definitions are easy, such as whether someone has been convicted of a felony, while others, such as whether someone is depressed, are not. Even without specific information one can develop "what if" scenarios using the tables by using general incidence data and knowing the upper limits of correlations between, say, personality inventories and behavior. One can easily move around in the tables and study the effect of changing various parameters.

In general, the use of the tables will provide a sobering view of a test's ability to classify individuals for clinical purposes. Given the level of technology currently available, this is, again in general, appropriate.

TECHNICAL APPENDIX

The primary method used in developing the tables is numerical analysis. Computer programs to numerically integrate univariate and bivariate normal distributions, to evaluate arious equations, and to print the tables were developed using Borland International's C++ 3.1.

Normally Distributed Criteria

The predictor, z_x, and criterion, z_y, are assumed to be jointly distributed according to a bivariate normal distribution with mean vector $\mu = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$ and covariance matrix $\Sigma = \begin{bmatrix} 1 & \rho_{xy} \\ \rho_{xy} & 1 \end{bmatrix}$. All members of the population with criterion scores greater than z_{y_crit}, i.e., $z_y > z_{y\_crit}$, are in the "clinical" group, or clinical sub population. The proportion of individuals in the clinical group, i.e., the base rate, is $\phi = \Pr[z_y > z_{y\_crit}] = \frac{1}{\sqrt{2\pi}} \int_{z_{y\_crit}}^{\infty} e^{\frac{-z_y^2}{2}} dz_y$. The maximum probability of error that a counselor will accept when classifying an individual client in the clinical group is α. For each value of α, ϕ and ρ_{xy} there are two entries in Table 1, one below the other. The upper value is z_{x_crit}, the critical value on the predictor. It is defined so that

$$\Pr[z_y \le z_{y\_crit} | z_x = z_{x\_crit}] = \Pr[z_{y.x\_crit} \le z_{y\_crit}] = \frac{1}{\sqrt{2\pi(1-\rho_{xy}^2)}} \int_{-\infty}^{z_{y\_crit}} e^{\frac{-(z_{y.x\_crit} - \rho_{xy} z_{x\_crit})^2}{2(1-\rho_{xy})^2}} dz_{y.x\_crit} = \alpha$$

In other words, z_{x_crit} is defined so that in the conditional distribution of z_y given z_{x_crit}, α proportion of the clients are not in the clinical group. z_{x_crit} is defined as

$$[1] \qquad z_{x\_crit} = \frac{z_{y\_crit} - z_{\alpha} \cdot \sqrt{1-\rho_{xy}^2}}{\rho_{xy}},$$

where z_{α} is that value from the standard normal distribution that cuts off the lower α proportion of the distribution, i.e., $\Pr[z \le z_{\alpha}] = \alpha$. Therefore, if a client whose standard score on the predictor is equal to z_{x_crit} is classified as belonging to the clinical group, that decision will be incorrect α proportion of the time. A person at or beyond z_{x_crit} has "tested positive," and α is the proportion of false positives *at the critical value*, z_{x_crit}.

The second value in the pair, the value underneath z_{x_crit} in the table, is the *long run*, conditional probability of a false positive, α_L. If a counselor used z_{x_crit} over a long period of time, the probability of a client testing positive would be

$\Pr[z_x \geq z_{x\_crit}] = \frac{1}{\sqrt{2\pi}} \int_{z_{x\_crit}}^{\infty} e^{\frac{-z_x^2}{2}} dz_x$. The probability of testing positive and being in the clinical group would be

$\Pr[z_x \geq z_{x\_crit} \text{ and } z_y > z_{y\_crit}] = \frac{1}{2\pi\sqrt{1-\rho_{xy}^2}} \int_{z_{x\_crit}}^{\infty} \int_{z_{y\_crit}}^{\infty} e^{\frac{-(z_x^2 - 2\rho_{xy} z_x z_y + z_y^2)}{2(1-\rho_{xy})^2}} dz_x dz_y$. In the long run, the probability of being *incorrectly* classified in the clinical group, given that you have tested

positive is

[2] $\alpha_L = \Pr[z_y \leq z_{y\_crit} \mid z_x \geq z_{x\_crit}] = \frac{\Pr[z_x \geq z_{x\_crit}] - \Pr[z_x \geq z_{x\_crit} \text{ and } z_y > z_{y\_crit}]}{\Pr[z_x \geq z_{x\_crit}]}$.

Dichotomous Criteria

The predictor, z_x, is assumed to be conditionally distributed according to a normal distribution for each value of the criterion, z_y. For the non-clinical population, $z_y = 0$, and for the clinical population $z_y = 1$. The distribution of z_x given $z_y = 0$, which we will denote as z_{x0} is $N(0,1)$, and the distribution of z_x given $z_y = 1$, or z_{x1}, is $N(\mu,1)$. The non-clinical population is assumed to be t times larger than the clinical population, and the base rate for the clinical group with respect to the combined populations is $\phi = \frac{1}{t+1}$. The maximum probability of error that a counselor will accept when classifying an individual client in the clinical group is α. For each value of α, ϕ and μ there are two entries in Table 2, one below the other. (Since both populations have unit variance and the non-clinical population has a mean of zero, μ is equal to the number of standard deviations between the means of the two populations.) The upper value in the table is z_{x_crit}, the critical value on the predictor. It is defined so that

$$\Pr[z_y = 0 | z_x = z_{x\_crit}] = \frac{t \cdot e^{\frac{-z_{x\_crit}^2}{2}}}{e^{\frac{-(z_{x\_crit}-\mu)^2}{2}} + t \cdot e^{\frac{-z_{x\_crit}^2}{2}}} = \alpha .$$

In other words, z_{x_crit} is defined so that at z_{x_crit}, α proportion of the clients are not in the clinical group. z_{x_crit} is defined as

$$[1] \qquad z_{x\_crit} = \frac{1}{\mu} \cdot \ln(t \cdot r) + \frac{\mu}{2},$$

where $r = \frac{1-\alpha}{\alpha}$. Therefore, if a client whose standard score on the predictor is equal to z_{x_crit} is classified as belonging to the clinical group, that decision will be incorrect α proportion of the time.* A person at or beyond z_{x_crit} has "tested positive," and α is the proportion of false positives *at the critical value*, z_{x_crit}. (The raw score formula for the critical value on the predictor is included here for the reader's information, $X_{crit} = \frac{1}{\mu_1 - \mu_0} \cdot \sigma^2 \cdot \ln(t \cdot r) + \frac{\mu_0 + \mu_1}{2}$.) (For simplicity of exposition, the author has chosen to treat likelihoods as probabilities and has avoided using an explicitly Bayesian approach.)

The second value in the pair, the value underneath z_{x_crit} in the table, is the *long run*, conditional probability of a false positive, α_L. If a counselor used z_{x_crit} over a long period of time, the probability of a client testing positive would be

$$\Pr[z_x \geq z_{x\_crit}] = \frac{t \cdot \Pr[z_{x0} \geq z_{x\_crit}] + \Pr[z_{x1} \geq z_{x\_crit}]}{t+1} = \frac{t \cdot \frac{1}{\sqrt{2\pi}} \int_{z_{x\_crit}}^{\infty} e^{\frac{-z_{x0}^2}{2}} dz_{x0} + \frac{1}{\sqrt{2\pi}} \int_{z_{x\_crit}}^{\infty} e^{\frac{-(z_{x1}-\mu)^2}{2}} dz_{x1}}{t+1}$$

while the probability of testing positive and *not* being in the clinical group would be

$$\Pr[z_x \geq z_{x\_crit} \text{ and } z_y = 0] = \frac{t \cdot \frac{1}{\sqrt{2\pi}} \int_{z_{x\_crit}}^{\infty} e^{\frac{-z_{x0}^2}{2}} dz_{x0}}{t+1}.$$

In the long run, the probability of being incorrectly classified in the clinical group, given that you have tested positive is

$$[2] \qquad \alpha_L = \Pr[z_y = 0 \mid z_x \geq z_{x\_crit}] = \frac{\Pr[z_x \geq z_{x\_crit} \text{ and } z_y = 0]}{\Pr[z_x \geq z_{x\_crit}]}.$$

In this section on dichotomous criteria, the clinical and non-clinical populations have been assumed to have equal variances. When this is not the case, the values in the table will not be correct, and in many cases, would not provide good approximations of the actual critical values and probabilities. The program described by Hummel (1990) should be used when there are unequal variances.

References

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Table 1

Normally Distributed Criterion

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .01

ϕ (z)	Correlation 0.20	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80
0.006	23.90	15.73	13.37	11.58	10.17	9.03	8.08	7.27	6.57	5.94	4.87
(2.50)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.004
0.010	23.03	15.15	12.87	11.15	9.79	8.68	7.76	6.98	6.30	5.70	4.65
(2.33)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.004
0.023	21.40	14.06	11.94	10.33	9.06	8.03	7.17	6.44	5.80	5.23	4.24
(2.00)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.004
0.050	19.62	12.88	10.93	9.44	8.27	7.32	6.52	5.84	5.25	4.72	3.80
(1.64)	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.004	0.003
0.067	18.90	12.40	10.51	9.08	7.95	7.03	6.26	5.60	5.03	4.52	3.62
(1.50)	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.004	0.003
0.100	17.80	11.67	9.89	8.53	7.46	6.59	5.86	5.24	4.69	4.20	3.35
(1.28)	*****	*****	*****	*****	*****	*****	*****	*****	0.005	0.004	0.003
0.150	16.58	10.85	9.19	7.92	6.92	6.10	5.42	4.83	4.31	3.85	3.04
(1.04)	*****	*****	*****	*****	*****	*****	*****	0.005	0.005	0.004	0.003
0.159	16.40	10.73	9.08	7.83	6.84	6.03	5.35	4.77	4.26	3.80	2.99
(1.00)	*****	*****	*****	*****	*****	*****	*****	0.005	0.005	0.004	0.003
0.200	15.60	10.20	8.63	7.43	6.49	5.71	5.06	4.50	4.01	3.58	2.80
(0.84)	*****	*****	*****	*****	*****	*****	*****	0.005	0.005	0.004	0.003
0.250	14.77	9.65	8.15	7.02	6.12	5.38	4.76	4.23	[illegible]76	3.34	2.59
(0.67)	*****	*****	*****	*****	*****	*****	0.006	0.005	0.005	0.004	0.003
0.300	14.02	9.15	7.72	6.64	5.78	5.08	4.49	3.98	3.53	3.12	2.40
(0.52)	*****	*****	*****	*****	*****	*****	0.006	0.005	0.005	0.004	0.003
0.309	13.90	9.06	7.65	6.58	5.73	5.03	4.44	3.94	3.49	3.09	2.37
(0.50)	*****	*****	*****	*****	*****	*****	0.006	0.005	0.005	0.004	0.003
0.350	13.32	8.68	7.33	6.29	5.47	4.80	4.23	3.74	3.31	2.92	2.23
(0.39)	*****	*****	*****	*****	*****	0.006	0.006	0.005	0.005	0.004	0.003
0.400	12.66	8.24	6.95	5.96	5.18	4.54	3.99	3.52	3.11	2.74	2.06
(0.25)	*****	*****	*****	*****	*****	0.006	0.006	0.005	0.005	0.004	0.003
0.450	12.03	7.82	6.59	5.64	4.90	4.28	3.76	3.31	2.91	2.55	1.90
(0.13)	*****	*****	*****	*****	0.006	0.006	0.005	0.005	0.005	0.004	0.003
0.500	11.40	7.40	6.23	5.33	4.62	4.03	3.53	3.10	2.72	2.37	1.74
(0.00)	*****	*****	*****	*****	0.006	0.006	0.005	0.005	0.004	0.004	0.003

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .05

ϕ	Correlation										
(z)	0.20	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80
0.006	20.56	13.56	11.55	10.02	8.82	7.85	7.04	6.36	5.77	5.25	4.36
(2.50)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.029
0.010	19.69	12.98	11.05	9.58	8.43	7.50	6.73	6.07	5.50	5.00	4.14
(2.33)	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.028
0.023	18.06	11.90	10.12	8.77	7.71	6.85	6.13	5.53	5.00	4.54	3.73
(2.00)	*****	*****	*****	*****	*****	*****	*****	*****	0.035	0.033	0.027
0.050	16.28	10.71	9.10	7.88	6.92	6.14	5.49	4.93	4.45	4.03	3.29
(1.64)	*****	*****	*****	*****	*****	*****	*****	0.036	0.034	0.032	0.026
0.067	15.56	10.23	8.69	7.52	6.60	5.85	5.22	4.69	4.23	3.82	3.11
(1.50)	*****	*****	*****	*****	*****	*****	*****	0.036	0.034	0.031	0.026
0.100	14.47	9.50	8.06	6.97	6.11	5.41	4.83	4.33	3.89	3.51	2.84
(1.28)	*****	*****	*****	*****	*****	*****	0.037	0.035	0.033	0.031	0.025
0.150	13.24	8.69	7.36	6.36	5.57	4.92	4.38	3.92	3.52	3.16	2.53
(1.04)	*****	*****	*****	*****	*****	0.039	0.037	0.035	0.032	0.030	0.024
0.159	13.06	8.56	7.26	6.27	5.49	4.85	4.32	3.86	3.46	3.11	2.48
(1.00)	*****	*****	*****	*****	*****	0.039	0.037	0.035	0.032	0.030	0.024
0.200	12.27	8.04	6.81	5.87	5.13	4.53	4.03	3.60	3.22	2.88	2.29
(0.84)	*****	*****	*****	*****	*****	0.038	0.036	0.034	0.032	0.029	0.023
0.250	11.43	7.48	6.33	5.46	4.76	4.20	3.72	3.32	2.96	2.64	2.08
(0.67)	*****	*****	*****	*****	0.040	0.038	0.036	0.033	0.031	0.028	0.022
0.300	10.68	6.98	5.90	5.08	4.43	3.90	3.45	3.07	2.73	2.43	1.89
(0.52)	*****	*****	*****	*****	0.039	0.037	0.035	0.033	0.030	0.028	0.021
0.309	10.56	6.90	5.83	5.02	4.38	3.85	3.41	3.03	2.69	2.39	1.86
(0.50)	*****	*****	*****	*****	0.039	0.037	0.035	0.033	0.030	0.027	0.021
0.350	9.98	6.51	5.50	4.73	4.12	3.62	3.20	2.84	2.52	2.23	1.72
(0.39)	*****	*****	*****	0.041	0.039	0.037	0.035	0.032	0.030	0.027	0.021
0.400	9.32	6.07	5.13	4.40	3.83	3.36	2.96	2.62	2.31	2.04	1.55
(0.25)	*****	*****	*****	0.040	0.039	0.036	0.034	0.032	0.029	0.026	0.020
0.450	8.69	5.65	4.76	4.08	3.54	3.10	2.73	2.40	2.12	1.86	1.39
(0.13)	*****	*****	0.042	0.040	0.038	0.036	0.033	0.031	0.028	0.025	0.019
0.500	8.06	5.23	4.40	3.77	3.26	2.85	2.50	2.19	1.92	1.68	1.23
(0.00)	*****	*****	0.042	0.040	0.038	0.035	0.033	0.030	0.027	0.025	0.018

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .10

ϕ	Correlation										
(z)	0.20	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80
0.006	18.78	12.41	10.57	9.19	8.10	7.22	6.49	5.88	5.34	4.88	4.09
(2.50)	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.072	0.062
0.010	17.91	11.83	10.08	8.75	7.71	6.87	6.18	5.59	5.08	4.63	3.87
(2.33)	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.071	0.061
0.023	16.28	10.74	9.14	7.94	6.99	6.22	5.58	5.04	4.58	4.16	3.46
(2.00)	*****	*****	*****	*****	*****	*****	*****	*****	0.074	0.069	0.058
0.050	14.50	9.56	8.13	7.05	6.20	5.51	4.94	4.45	4.03	3.66	3.02
(1.64)	*****	*****	*****	*****	*****	*****	0.080	0.076	0.072	0.067	0.056
0.067	13.78	9.08	7.72	6.69	5.88	5.22	4.67	4.21	3.81	3.45	2.84
(1.50)	*****	*****	*****	*****	*****	*****	0.079	0.075	0.071	0.066	0.055
0.100	12.69	8.35	7.09	6.14	5.39	4.78	4.28	3.84	3.47	3.14	2.56
(1.28)	*****	*****	*****	*****	*****	0.081	0.078	0.074	0.069	0.064	0.053
0.150	11.46	7.53	6.39	5.53	4.85	4.29	3.83	3.44	3.09	2.79	2.26
(1.04)	*****	*****	*****	*****	0.083	0.080	0.076	0.072	0.067	0.062	0.050
0.159	11.28	7.41	6.29	5.44	4.77	4.22	3.76	3.38	3.04	2.74	2.21
(1.00)	*****	*****	*****	*****	0.083	0.080	0.076	0.072	0.067	0.062	0.050
0.200	10.49	6.88	5.83	5.04	4.41	3.90	3.48	3.11	2.79	2.51	2.01
(0.84)	*****	*****	*****	*****	0.082	0.079	0.075	0.070	0.066	0.060	0.048
0.250	9.65	6.32	5.36	4.62	4.04	3.57	3.17	2.83	2.54	2.27	1.80
(0.67)	*****	*****	*****	0.085	0.081	0.078	0.074	0.069	0.064	0.059	0.046
0.300	8.90	5.82	4.93	4.25	3.71	3.27	2.90	2.58	2.31	2.06	1.62
(0.52)	*****	*****	0.087	0.084	0.080	0.076	0.072	0.068	0.062	0.057	0.045
0.309	8.78	5.74	4.86	4.19	3.65	3.22	2.86	2.54	2.27	2.02	1.59
(0.50)	*****	*****	0.087	0.084	0.080	0.076	0.072	0.067	0.062	0.057	0.044
0.350	8.20	5.36	4.53	3.90	3.40	2.99	2.65	2.35	2.09	1.86	1.44
(0.39)	*****	*****	0.087	0.083	0.079	0.075	0.071	0.066	0.061	0.055	0.043
0.400	7.55	4.92	4.15	3.57	3.11	2.73	2.41	2.13	1.89	1.67	1.28
(0.25)	*****	0.089	0.086	0.082	0.078	0.074	0.069	0.064	0.059	0.054	0.041
0.450	6.91	4.49	3.79	3.25	2.82	2.47	2.17	1.92	1.69	1.49	1.12
(0.13)	*****	0.088	0.085	0.081	0.077	0.073	0.068	0.063	0.058	0.052	0.040
0.500	6.28	4.08	3.43	2.94	2.54	2.22	1.95	1.71	1.50	1.31	0.96
(0.00)	*****	0.088	0.084	0.080	0.076	0.071	0.066	0.061	0.056	0.050	0.038

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .20

ϕ (z)	Correlation 0.20	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80
0.006	16.62	11.01	9.40	8.18	7.23	6.46	5.82	5.29	4.83	4.43	3.76
(2.50)	*****	*****	*****	*****	*****	*****	*****	*****	0.158	0.151	0.131
0.010	15.75	10.43	8.90	7.74	6.84	6.11	5.51	5.00	4.56	4.18	3.54
(2.33)	*****	*****	*****	*****	*****	*****	*****	0.164	0.157	0.149	0.129
0.023	14.12	9.34	7.97	6.93	6.11	5.46	4.91	4.46	4.06	3.72	3.13
(2.00)	*****	*****	*****	*****	*****	*****	0.167	0.161	0.153	0.145	0.124
0.050	12.35	8.16	6.95	6.04	5.33	4.75	4.27	3.86	3.51	3.21	2.69
(1.64)	*****	*****	*****	*****	*****	0.170	0.164	0.157	0.149	0.140	0.118
0.067	11.62	7.68	6.54	5.68	5.00	4.46	4.01	3.62	3.29	3.00	2.51
(1.50)	*****	*****	*****	*****	*****	0.169	0.162	0.155	0.147	0.138	0.116
0.100	10.53	6.95	5.91	5.13	4.52	4.02	3.61	3.26	2.96	2.69	2.23
(1.28)	*****	*****	*****	*****	0.172	0.166	0.159	0.152	0.143	0.134	0.112
0.150	9.31	6.13	5.21	4.52	3.97	3.53	3.16	2.85	2.58	2.34	1.93
(1.04)	*****	*****	*****	0.176	0.170	0.163	0.156	0.148	0.139	0.129	0.106
0.159	9.12	6.01	5.11	4.43	3.89	3.46	3.10	2.79	2.52	2.29	1.88
(1.00)	*****	*****	*****	0.175	0.169	0.163	0.155	0.147	0.138	0.129	0.105
0.200	8.33	5.48	4.66	4.03	3.54	3.14	2.81	2.52	2.28	2.06	1.68
(0.84)	*****	*****	0.179	0.174	0.167	0.160	0.153	0.144	0.135	0.125	0.102
0.250	7.50	4.92	4.18	3.61	3.17	2.81	2.50	2.25	2.02	1.82	1.47
(0.67)	*****	0.183	0.178	0.172	0.165	0.158	0.149	0.141	0.131	0.121	0.097
0.300	6.75	4.42	3.75	3.24	2.84	2.51	2.23	2.00	1.79	1.61	1.29
(0.52)	*****	0.182	0.176	0.169	0.162	0.155	0.146	0.137	0.128	0.117	0.094
0.309	6.62	4.34	3.68	3.18	2.78	2.46	2.19	1.96	1.75	1.57	1.26
(0.50)	*****	0.181	0.176	0.169	0.162	0.154	0.146	0.137	0.127	0.117	0.093
0.350	6.05	3.96	3.35	2.89	2.53	2.23	1.98	1.76	1.58	1.41	1.11
(0.39)	*****	0.180	0.174	0.167	0.160	0.152	0.143	0.134	0.124	0.113	0.090
0.400	5.39	3.52	2.98	2.56	2.23	1.96	1.74	1.54	1.37	1.22	0.95
(0.25)	*****	0.178	0.172	0.165	0.157	0.148	0.139	0.130	0.120	0.109	0.086
0.450	4.75	3.10	2.61	2.24	1.95	1.71	1.51	1.33	1.18	1.04	0.79
(0.13)	0.188	0.177	0.170	0.162	0.154	0.145	0.136	0.126	0.116	0.105	0.082
0.500	4.12	2.68	2.25	1.93	1.67	1.46	1.28	1.12	0.98	0.86	0.63
(0.00)	0.187	0.174	0.167	0.159	0.150	0.141	0.132	0.122	0.112	0.101	0.078

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .25

ϕ (z)	Correlation 0.20	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80
0.006	15.80	10.48	8.95	7.80	6.89	6.17	5.57	5.07	4.63	4.26	3.63
(2.50)	*****	*****	*****	*****	*****	*****	*****	*****	0.201	0.191	0.168
0.010	14.94	9.90	8.45	7.36	6.51	5.82	5.25	4.78	4.37	4.01	3.41
(2.33)	*****	*****	*****	*****	*****	*****	*****	0.207	0.199	0.189	0.165
0.023	13.30	8.81	7.52	6.55	5.78	5.17	4.66	4.23	3.87	3.55	3.01
(2.00)	*****	*****	*****	*****	*****	*****	0.211	0.203	0.194	0.184	0.159
0.050	11.53	7.63	6.50	5.66	4.99	4.46	4.01	3.64	3.32	3.04	2.56
(1.64)	*****	*****	*****	*****	0.221	0.214	0.206	0.198	0.188	0.178	0.151
0.067	10.80	7.14	6.09	5.30	4.67	4.17	3.75	3.40	3.10	2.83	2.38
(1.50)	*****	*****	*****	*****	0.219	0.212	0.204	0.196	0.186	0.175	0.148
0.100	9.71	6.42	5.47	4.75	4.19	3.73	3.35	3.04	2.76	2.52	2.11
(1.28)	*****	*****	*****	0.223	0.217	0.209	0.201	0.192	0.181	0.170	0.142
0.150	8.49	5.60	4.77	4.14	3.64	3.24	2.91	2.63	2.38	2.17	1.80
(1.04)	*****	*****	0.227	0.220	0.213	0.205	0.196	0.186	0.176	0.164	0.135
0.159	8.30	5.48	4.66	4.05	3.56	3.17	2.84	2.57	2.33	2.12	1.76
(1.00)	*****	*****	0.226	0.220	0.213	0.204	0.195	0.186	0.175	0.163	0.134
0.200	7.51	4.95	4.21	3.65	3.21	2.85	2.55	2.30	2.08	1.89	1.56
(0.84)	*****	0.231	0.225	0.218	0.210	0.201	0.192	0.182	0.170	0.158	0.129
0.250	6.68	4.39	3.73	3.23	2.84	2.52	2.25	2.02	1.83	1.65	1.35
(0.67)	*****	0.229	0.222	0.215	0.207	0.198	0.188	0.177	0.165	0.153	0.124
0.300	5.93	3.89	3.30	2.86	2.50	2.22	1.98	1.77	1.60	1.44	1.16
(0.52)	*****	0.227	0.220	0.212	0.203	0.194	0.183	0.172	0.161	0.148	0.119
0.309	5.80	3.81	3.23	2.80	2.45	2.17	1.93	1.73	1.56	1.40	1.13
(0.50)	*****	0.227	0.220	0.211	0.203	0.193	0.183	0.172	0.160	0.147	0.118
0.350	5.23	3.43	2.91	2.51	2.19	1.94	1.72	1.54	1.38	1.24	0.99
(0.39)	*****	0.225	0.217	0.209	0.199	0.190	0.179	0.168	0.156	0.143	0.114
0.400	4.57	2.99	2.53	2.18	1.90	1.67	1.48	1.32	1.18	1.05	0.82
(0.25)	0.236	0.223	0.214	0.205	0.196	0.185	0.174	0.163	0.150	0.137	0.109
0.450	3.93	2.56	2.16	1.86	1.62	1.42	1.25	1.11	0.98	0.8[illegible]	0.66
(0.13)	0.235	0.220	0.211	0.201	0.191	0.180	0.169	0.157	0.145	0.132	0.103
0.500	3.30	2.14	1.81	1.55	1.34	1.17	1.02	0.90	0.79	0.69	0.51
(0.00)	0.233	0.216	0.207	0.197	0.186	0.175	0.164	0.152	0.139	0.126	0.098

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .33

ϕ (z)	Correlation 0.20	 0.30	 0.35	 0.40	 0.45	 0.50	 0.55	 0.60	 0.65	 0.70	 0.80
0.006 (2.50)	14.66 *****	9.73 *****	8.32 *****	7.26 *****	6.43 *****	5.76 *****	5.21 *****	4.75 0.280	4.36 0.270	4.02 0.258	3.45 0.228
0.010 (2.33)	13.79 *****	9.15 *****	7.82 *****	6.82 *****	6.04 *****	5.41 *****	4.90 0.286	4.46 0.277	4.09 0.267	3.77 0.255	3.24 0.224
0.023 (2.00)	12.16 *****	8.07 *****	6.89 *****	6.01 *****	5.32 *****	4.76 0.290	4.30 0.282	3.92 0.272	3.59 0.261	3.31 0.248	2.83 0.216
0.050 (1.64)	10.38 *****	6.88 *****	5.88 *****	5.12 *****	4.53 0.294	4.05 0.285	3.66 0.276	3.33 0.265	3.04 0.253	2.80 0.239	2.39 0.206
0.067 (1.50)	9.66 *****	6.40 *****	5.46 *****	4.76 0.299	4.21 0.291	3.76 0.283	3.40 0.273	3.09 0.262	2.82 0.249	2.59 0.235	2.20 0.201
0.100 (1.28)	8.56 *****	5.67 *****	4.84 0.304	4.21 0.296	3.72 0.288	3.33 0.278	3.00 0.268	2.72 0.256	2.49 0.243	2.28 0.229	1.93 0.193
0.150 (1.04)	7.34 *****	4.85 0.308	4.14 0.301	3.60 0.292	3.18 0.283	2.83 0.273	2.55 0.261	2.31 0.249	2.11 0.235	1.93 0.220	1.63 0.184
0.159 (1.00)	7.16 *****	4.73 0.307	4.03 0.300	3.51 0.292	3.10 0.282	2.76 0.272	2.49 0.260	2.25 0.248	2.05 0.234	1.88 0.219	1.58 0.182
0.200 (0.84)	6.[illegible] *****	4.20 0.305	3.58 0.297	3.11 0.288	2.74 0.278	2.45 0.267	2.20 0.255	1.99 0.242	1.81 0.228	1.65 0.212	1.38 0.175
0.250 (0.67)	5.53 *****	3.65 0.302	3.10 0.294	2.69 0.284	2.37 0.273	2.11 0.262	1.89 0.249	1.71 0.235	1.55 0.221	1.41 0.205	1.17 0.168
0.300 (0.52)	4.78 0.315	3.15 0.299	2.68 0.290	2.32 0.279	2.04 0.268	1.81 0.256	1.62 0.243	1.46 0.229	1.32 0.214	1.20 0.197	0.99 0.160
0.309 (0.50)	4.66 0.315	3.07 0.299	2.61 0.289	2.26 0.279	1.98 0.267	1.76 0.255	1.58 0.242	1.42 0.228	1.28 0.213	1.16 0.196	0.95 0.159
0.350 (0.39)	4.08 0.313	2.68 0.296	2.28 0.286	1.97 0.275	1.73 0.263	1.53 0.250	1.37 0.236	1.23 0.222	1.11 0.207	1.00 0.190	0.81 0.153
0.400 (0.25)	3.42 0.311	2.24 0.292	1.90 0.281	1.64 0.269	1.44 0.257	1.27 0.243	1.13 0.229	1.01 0.215	0.90 0.199	0.81 0.183	0.65 0.146
0.450 (0.13)	2.78 0.308	1.82 0.287	1.54 0.275	1.32 0.263	1.15 0.250	1.01 0.236	0.90 0.222	0.80 0.207	0.71 0.191	0.63 0.175	0.49 0.139
0.500 (0.00)	2.16 0.304	1.40 0.281	1.18 0.269	1.01 0.256	0.87 0.242	0.76 0.228	0.67 0.214	0.59 0.199	0.51 0.183	0.45 0.167	0.33 0.131

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .40

ϕ (z)	Correlation 0.20	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80
0.006	13.74	9.14	7.82	6.83	6.06	5.44	4.93	4.50	4.14	3.83	3.32
(2.50)	*****	*****	*****	*****	*****	*****	0.353	0.343	0.331	0.318	0.283
0.010	12.87	8.56	7.32	6.40	5.67	5.09	4.61	4.22	3.88	3.58	3.10
(2.33)	*****	*****	*****	*****	*****	*****	0.350	0.340	0.328	0.314	0.279
0.023	11.24	7.47	6.39	5.58	4.95	4.44	4.02	3.67	3.37	3.12	2.69
(2.00)	*****	*****	*****	*****	0.363	0.355	0.345	0.333	0.321	0.306	0.268
0.050	9.47	6.29	5.38	4.69	4.16	3.73	3.38	3.08	2.83	2.61	2.25
(1.64)	*****	*****	*****	0.367	0.358	0.348	0.337	0.325	0.311	0.295	0.255
0.067	8.74	5.81	4.96	4.33	3.84	3.44	3.11	2.84	2.60	2.40	2.06
(1.50)	*****	*****	0.372	0.364	0.355	0.345	0.334	0.321	0.306	0.290	0.249
0.100	7.65	5.08	4.34	3.78	3.35	3.00	2.71	2.47	2.27	2.09	1.79
(1.28)	*****	*****	0.369	0.361	0.351	0.340	0.327	0.314	0.298	0.281	0.240
0.150	6.42	4.26	3.64	3.17	2.81	2.51	2.27	2.07	1.89	1.74	1.49
(1.04)	*****	0.374	0.365	0.355	0.344	0.332	0.319	0.304	0.288	0.270	0.228
0.159	6.24	4.14	3.54	3.08	2.72	2.44	2.20	2.00	1.83	1.69	1.44
(1.00)	*****	0.373	0.364	0.354	0.343	0.331	0.317	0.303	0.287	0.269	0.226
0.200	5.45	3.61	3.08	2.68	2.37	2.12	1.91	1.74	1.59	1.46	1.24
(0.84)	*****	0.370	0.361	0.350	0.338	0.325	0.311	0.296	0.279	0.261	0.217
0.250	4.61	3.05	2.61	2.27	2.00	1.79	1.61	1.46	1.33	1.22	1.03
(0.67)	0.384	0.366	0.356	0.344	0.331	0.318	0.303	0.287	0.270	0.251	0.208
0.300	3.86	2.55	2.18	1.89	1.67	1.49	1.34	1.21	1.10	1.01	0.85
(0.52)	0.381	0.362	0.350	0.338	0.325	0.310	0.295	0.278	0.261	0.242	0.198
0.309	3.74	2.47	2.11	1.83	1.61	1.44	1.29	1.17	1.07	0.97	0.82
(0.50)	0.381	0.361	0.350	0.337	0.323	0.309	0.293	0.277	0.259	0.240	0.197
0.350	3.17	2.09	1.78	1.54	1.36	1.21	1.09	0.98	0.89	0.81	0.67
(0.39)	0.378	0.357	0.345	0.331	0.317	0.302	0.286	0.269	0.252	0.232	0.189
0.400	2.51	1.65	1.40	1.21	1.07	0.95	0.85	0.76	0.69	0.62	0.51
(0.25)	0.375	0.351	0.338	0.324	0.309	0.293	0.277	0.260	0.242	0.223	0.180
0.450	1.87	1.22	1.04	0.89	0.78	0.69	0.61	0.55	0.49	0.44	0.35
(0.13)	0.370	0.344	0.330	0.315	0.299	0.284	0.267	0.250	0.232	0.213	0.170
0.500	1.24	0.81	0.68	0.58	0.50	0.44	0.38	0.34	0.30	0.26	0.19
(0.00)	0.363	0.335	0.320	0.305	0.289	0.273	0.256	0.239	0.221	0.202	0.161

Table 1: NORMALLY DISTRIBUTED CRITERION variable and α = .50

ϕ (z)	Correlation 0.20	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.80
0.006	12.50	8.33	7.14	6.25	5.56	5.00	4.55	4.17	.85	3.57	3.12
(2.50)	*****	*****	*****	*****	*****	0.456	0.447	0.435	0.422	0.407	0.366
0.010	11.63	7.75	6.65	5.82	5.17	4.65	4.23	3.88	3.58	3.32	2.91
(2.33)	*****	*****	*****	*****	*****	0.454	0.443	0.431	0.418	0.402	0.360
0.023	10.00	6.67	5.71	5.00	4.44	4.00	3.64	3.33	3.08	2.86	2.50
(2.00)	*****	*****	*****	*****	0.458	0.448	0.436	0.423	0.408	0.391	0.347
0.050	8.22	5.48	4.70	4.11	3.66	3.29	2.99	2.74	2.53	2.35	2.06
(1.64)	*****	*****	0.470	0.461	0.451	0.440	0.427	0.412	0.396	0.377	0.330
0.067	7.50	5.00	4.29	3.75	3.33	3.00	2.73	2.50	2.31	2.14	1.87
(1.50)	*****	0.476	0.468	0.458	0.447	0.435	0.422	0.407	0.390	0.371	0.322
0.100	6.41	4.27	3.66	3.20	2.85	2.56	2.33	2.14	1.97	1.83	1.60
(1.28)	*****	0.473	0.463	0.453	0.441	0.428	0.414	0.398	0.380	0.359	0.310
0.150	5.18	3.45	2.96	2.59	2.30	2.07	1.88	1.73	1.59	1.48	1.30
(1.04)	*****	0.468	0.457	0.445	0.432	0.418	0.402	0.385	0.366	0.345	0.294
0.159	5.00	3.33	2.86	2.50	2.22	2.00	1.82	1.67	1.54	1.43	1.25
(1.00)	0.484	0.467	0.456	0.444	0.431	0.416	0.400	0.383	0.364	0.343	0.291
0.200	4.21	2.81	2.40	2.10	1.87	1.68	1.53	1.40	1.29	1.20	1.05
(0.84)	0.482	0.462	0.451	0.438	0.423	0.408	0.391	0.373	0.353	0.332	0.280
0.250	3.37	2.25	1.93	1.69	1.50	1.35	1.23	1.12	1.04	0.96	0.84
(0.67)	0.478	0.456	0.443	0.429	0.414	0.398	0.380	0.362	0.341	0.319	0.267
0.300	2.62	1.75	1.50	1.31	1.17	1.05	0.95	0.87	0.81	0.75	0.66
(0.52)	0.474	0.449	0.435	0.420	0.404	0.387	0.369	0.350	0.329	0.307	0.255
0.309	2.50	1.67	1.43	1.25	1.11	1.00	0.91	0.83	0.77	0.71	0.62
(0.50)	0.473	0.448	0.434	0.419	0.402	0.385	0.367	0.348	0.327	0.304	0.252
0.350	1.93	1.28	1.10	0.96	0.86	0.77	0.70	0.64	0.59	0.55	0.48
(0.39)	0.469	0.441	0.426	0.410	0.393	0.375	0.357	0.337	0.316	0.294	0.242
0.400	1.27	0.84	0.72	0.63	0.56	0.51	0.46	0.42	0.39	0.36	0.32
(0.25)	0.461	0.431	0.415	0.398	0.381	0.363	0.344	0.324	0.303	0.281	0.230
0.450	0.63	0.42	0.36	0.31	0.28	0.25	0.23	0.21	0.19	0.18	0.16
(0.13)	0.451	0.419	0.402	0.385	0.367	0.349	0.330	0.310	0.289	0.267	0.217
0.500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(0.00)	0.436	0.403	0.386	0.369	0.351	0.333	0.314	0.295	0.274	0.253	0.204

Table 2

Dichotomous Criterion

Table 2: DICHOTOMOUS CRITERION variable and $\alpha = .01$

ϕ (t)	SDs Apart-- 0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
0.006	38.81	19.59	13.27	10.17	8.36	7.20	6.40	5.84	5.12	4.72	4.51
(160.)	*****	*****	*****	*****	*****	*****	*****	*****	*****	0.004	0.003
0.010	36.89	18.63	12.63	9.69	7.98	6.88	6.13	5.60	4.93	4.56	4.38
(99.0)	*****	*****	*****	*****	*****	*****	*****	*****	0.005	0.004	0.003
0.023	33.55	16.96	11.52	8.86	7.31	6.32	5.65	5.18	4.59	4.29	4.14
(43.0)	*****	*****	*****	*****	*****	*****	*****	*****	0.005	0.004	0.003
0.050	30.28	15.33	10.43	8.04	6.66	5.78	5.18	4.77	4.27	4.01	3.90
(19.0)	*****	*****	*****	*****	*****	*****	*****	0.006	0.005	0.004	0.003
0.067	29.05	14.71	10.02	7.73	6.41	5.57	5.01	4.62	4.14	3.91	3.82
(14.0)	*****	*****	*****	*****	*****	*****	*****	0.006	0.005	0.004	0.003
0.100	27.29	13.83	9.43	7.29	6.06	5.28	4.76	4.40	3.97	3.76	3.69
(9.00)	*****	*****	*****	*****	*****	*****	0.007	0.006	0.005	0.003	0.002
0.150	25.44	12.91	8.81	6.83	5.69	4.97	4.49	4.16	3.78	3.61	3.56
(5.67)	*****	*****	*****	*****	*****	0.007	0.007	0.006	0.004	0.003	0.002
0.159	25.18	12.78	8.73	6.76	5.64	4.93	4.45	4.13	3.76	3.59	3.54
(5.30)	*****	*****	*****	*****	*****	0.007	0.006	0.006	0.004	0.003	0.002
0.200	24.05	12.21	8.35	6.48	5.41	4.74	4.29	3.99	3.64	3.49	3.46
(4.00)	*****	*****	*****	*****	*****	0.007	0.006	0.006	0.004	0.003	0.002
0.250	22.90	11.64	7.97	6.19	5.18	4.55	4.13	3.85	3.53	3.40	3.38
(3.00)	*****	*****	*****	*****	*****	0.007	0.006	0.006	0.004	0.003	0.002
0.300	21.89	11.13	7.63	5.94	4.98	4.38	3.98	3.72	3.43	3.31	3.30
(2.33)	*****	*****	*****	*****	0.008	0.007	0.006	0.005	0.004	0.003	0.002
0.309	21.73	11.05	7.58	5.90	4.95	4.35	3.96	3.70	3.41	3.30	3.29
(2.24)	*****	*****	*****	*****	0.008	0.007	0.006	0.005	0.004	0.003	0.002
0.350	20.98	10.68	7.33	5.71	4.80	4.23	3.85	3.61	3.34	3.24	3.24
(1.86)	*****	*****	*****	*****	0.008	0.007	0.006	0.005	0.004	0.003	0.002
0.400	20.13	10.25	7.04	5.50	4.63	4.08	3.73	3.50	3.25	3.17	3.18
(1.50)	*****	*****	*****	*****	0.008	0.007	0.006	0.005	0.004	0.003	0.002
0.450	19.31	9.84	6.77	5.30	4.46	3.95	3.62	3.40	3.17	3.10	3.12
(1.22)	*****	*****	*****	*****	0.007	0.007	0.006	0.005	0.004	0.003	0.002
0.500	18.51	9.44	6.50	5.10	4.30	3.81	3.50	3.30	3.09	3.03	3.06
(1.00)	*****	*****	*****	*****	0.007	0.007	0.006	0.005	0.004	0.002	0.002

Table 2: DICHOTOMOUS CRITERION variable and α = .05

ϕ (t)	SDs Apart-- 0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
0.006	32.20	16.29	11.07	8.52	7.04	6.10	5.46	5.01	4.46	4.17	4.04
(160.)	*****	*****	*****	*****	*****	*****	*****	*****	0.026	0.020	0.014
0.010	30.28	15.33	10.43	8.04	6.66	5.78	5.18	4.77	4.27	4.01	3.90
(99.0)	*****	*****	*****	*****	*****	*****	*****	0.032	0.025	0.019	0.013
0.023	26.94	13.66	9.31	7.20	5.99	5.22	4.71	4.35	3.93	3.73	3.67
(43.0)	*****	*****	*****	*****	*****	*****	0.034	0.030	0.023	0.017	0.012
0.050	23.68	12.03	8.23	6.39	5.34	4.68	4.24	3.94	3.61	3.46	3.43
(19.0)	*****	*****	*****	*****	*****	0.036	0.032	0.028	0.022	0.016	0.011
0.067	22.45	11.41	7.82	6.08	5.09	4.47	4.06	3.79	3.48	3.36	3.34
(14.0)	*****	*****	*****	*****	*****	0.035	0.032	0.028	0.021	0.015	0.010
0.100	20.69	10.53	7.23	5.64	4.74	4.18	3.81	3.57	3.31	3.21	3.22
(9.00)	*****	*****	*****	*****	0.038	0.035	0.031	0.027	0.020	0.014	0.009
0.150	18.84	9.61	6.61	5.18	4.37	3.87	3.55	3.34	3.12	3.06	3.09
(5.67)	*****	*****	*****	*****	0.038	0.034	0.030	0.026	0.019	0.013	0.009
0.159	18.58	9.48	6.53	5.11	4.32	3.83	3.51	3.31	3.10	3.04	3.07
(5.30)	*****	*****	*****	*****	0.037	0.033	0.029	0.026	0.019	0.013	0.008
0.200	17.45	8.91	6.15	4.83	4.09	3.64	3.35	3.17	2.98	2.94	2.99
(4.00)	*****	*****	*****	0.041	0.037	0.033	0.029	0.025	0.018	0.012	0.008
0.250	16.30	8.34	5.77	4.54	3.86	3.45	3.19	3.02	2.87	2.85	2.91
(3.00)	*****	*****	*****	0.040	0.036	0.032	0.028	0.024	0.017	0.012	0.008
0.300	15.29	7.83	5.43	4.29	3.66	3.28	3.04	2.90	2.77	2.76	2.83
(2.33)	*****	*****	*****	0.040	0.036	0.031	0.027	0.023	0.016	0.011	0.007
0.309	15.13	7.75	5.38	4.25	3.63	3.25	3.02	2.88	2.75	2.75	2.82
(2.24)	*****	*****	*****	0.040	0.036	0.031	0.027	0.023	0.016	0.011	0.007
0.350	14.38	7.38	5.13	4.06	3.48	3.13	2.91	2.78	2.68	2.69	2.77
(1.86)	*****	*****	*****	0.039	0.035	0.031	0.027	0.023	0.016	0.011	0.007
0.400	13.52	6.95	4.84	3.85	3.30	2.98	2.79	2.67	2.59	2.62	2.71
(1.50)	*****	*****	0.043	0.039	0.034	0.030	0.026	0.022	0.015	0.010	0.006
0.450	12.71	6.54	4.57	3.65	3.14	2.85	2.67	2.57	2.51	2.55	2.65
(1.22)	*****	*****	0.043	0.038	0.034	0.029	0.025	0.021	0.015	0.010	0.006
0.500	11.90	6.14	4.30	3.44	2.98	2.71	2.56	2.47	2.43	2.48	2.59
(1.00)	*****	*****	0.042	0.038	0.033	0.029	0.025	0.021	0.014	0.009	0.006

Table 2: DICHOTOMOUS CRITERION variable and α = .10

ϕ (t)	SDs Apart-- 0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
0.006	29.22	14.80	10.07	7.77	6.44	5.60	5.03	4.64	4.16	3.92	3.83
(160.)	*****	*****	*****	*****	*****	*****	*****	0.063	0.050	0.038	0.027
0.010	27.29	13.83	9.43	7.29	6.06	5.28	4.76	4.40	3.97	3.76	3.69
(99.0)	*****	*****	*****	*****	*****	*****	0.069	0.062	0.048	0.036	0.025
0.023	23.95	12.16	8.32	6.46	5.39	4.72	4.28	3.98	3.63	3.49	3.45
(43.0)	*****	*****	*****	*****	*****	0.073	0.066	0.059	0.045	0.033	0.022
0.050	20.69	10.53	7.23	5.64	4.74	4.18	3.81	3.57	3.31	3.21	3.22
(19.0)	*****	*****	*****	*****	0.078	0.070	0.063	0.055	0.041	0.029	0.020
0.067	19.46	9.92	6.82	5.33	4.49	3.97	3.64	3.42	3.18	3.11	3.13
(14.0)	*****	*****	*****	*****	0.077	0.069	0.061	0.053	0.039	0.028	0.019
0.100	17.70	9.04	6.23	4.89	4.14	3.68	3.39	3.20	3.01	2.96	3.01
(9.00)	*****	*****	*****	0.083	0.075	0.067	0.059	0.051	0.037	0.026	0.017
0.150	15.85	8.11	5.62	4.43	3.77	3.37	3.12	2.97	2.82	2.81	2.87
(5.67)	*****	*****	*****	0.081	0.073	0.065	0.056	0.049	0.035	0.024	0.015
0.159	15.59	7.98	5.53	4.37	3.72	3.33	3.08	2.93	2.80	2.79	2.85
(5.30)	*****	*****	*****	0.081	0.073	0.064	0.056	0.048	0.035	0.023	0.015
0.200	14.46	7.42	5.15	4.08	3.49	3.14	2.92	2.79	2.68	2.69	2.77
(4.00)	*****	*****	*****	0.080	0.071	0.063	0.054	0.047	0.033	0.022	0.014
0.250	13.31	6.84	4.77	3.80	3.26	2.95	2.76	2.65	2.57	2.60	2.69
(3.00)	*****	*****	0.087	0.079	0.070	0.061	0.053	0.045	0.031	0.021	0.013
0.300	12.30	6.34	4.43	3.54	3.06	2.78	2.61	2.52	2.47	2.51	2.62
(2.33)	*****	*****	0.086	0.077	0.068	0.060	0.051	0.043	0.030	0.020	0.013
0.309	12.14	6.26	4.38	3.50	3.03	2.75	2.59	2.50	2.45	2.50	2.61
(2.24)	*****	*****	0.086	0.077	0.068	0.059	0.051	0.043	0.030	0.020	0.012
0.350	11.39	5.88	4.13	3.32	2.88	2.63	2.48	2.41	2.38	2.44	2.55
(1.86)	*****	*****	0.085	0.076	0.067	0.058	0.050	0.042	0.029	0.019	0.012
0.400	10.54	5.46	3.85	3.10	2.71	2.49	2.36	2.30	2.29	2.37	2.49
(1.50)	*****	*****	0.084	0.075	0.066	0.056	0.048	0.040	0.027	0.018	0.011
0.450	9.72	5.05	3.57	2.90	2.54	2.35	2.25	2.20	2.21	2.30	2.44
(1.22)	*****	*****	0.083	0.074	0.064	0.055	0.046	0.039	0.026	0.017	0.011
0.500	8.91	4.64	3.30	2.70	2.38	2.21	2.13	2.10	2.13	2.23	2.38
(1.00)	*****	0.091	0.082	0.072	0.063	0.053	0.045	0.037	0.025	0.016	0.010

Table 2: DICHOTOMOUS CRITERION variable and α = .20

ϕ (t)	SDs Apart-- 0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
0.006 (160.)	25.97 *****	13.17 *****	8.99 *****	6.96 *****	5.79 *****	5.06 *****	4.57 0.140	4.23 0.127	3.83 0.100	3.65 0.075	3.60 0.053
0.010 (99.0)	24.05 *****	12.21 *****	8.35 *****	6.48 *****	5.41 *****	4.74 0.151	4.29 0.137	3.99 0.123	3.64 0.095	3.49 0.071	3.46 0.049
0.023 (43.0)	20.71 *****	10.54 *****	7.24 *****	5.65 *****	4.74 0.159	4.18 0.145	3.82 0.131	3.57 0.116	3.31 0.088	3.22 0.063	3.22 0.043
0.050 (19.0)	17.45 *****	8.91 *****	6.15 *****	4.83 0.168	4.09 0.154	3.64 0.138	3.35 0.123	3.17 0.108	2.98 0.079	2.94 0.056	2.99 0.037
0.067 (14.0)	16.22 *****	8.30 *****	5.74 *****	4.52 0.166	3.84 0.151	3.43 0.136	3.17 0.120	3.01 0.104	2.86 0.076	2.84 0.053	2.90 0.035
0.100 (9.00)	14.46 *****	7.42 *****	5.15 *****	4.08 0.163	3.49 0.147	3.14 0.131	2.92 0.115	2.79 0.099	2.68 0.071	2.69 0.049	2.77 0.032
0.150 (5.67)	12.61 *****	6.49 *****	4.54 0.175	3.62 0.159	3.12 0.143	2.83 0.126	2.66 0.109	2.56 0.093	2.50 0.066	2.54 0.044	2.64 0.028
0.159 (5.30)	12.34 *****	6.36 *****	4.45 0.175	3.55 0.159	3.07 0.142	2.79 0.125	2.62 0.108	2.53 0.093	2.47 0.065	2.52 0.044	2.62 0.028
0.200 (4.00)	11.22 *****	5.80 *****	4.07 0.173	3.27 0.156	2.84 0.139	2.60 0.121	2.46 0.104	2.39 0.089	2.36 0.062	2.42 0.041	2.54 0.026
0.250 (3.00)	10.06 *****	5.22 *****	3.69 0.170	2.98 0.153	2.61 0.135	2.41 0.117	2.29 0.100	2.24 0.085	2.24 0.058	2.33 0.038	2.46 0.024
0.300 (2.33)	9.06 *****	4.72 0.184	3.35 0.168	2.73 0.150	2.41 0.131	2.24 0.113	2.15 0.096	2.12 0.081	2.14 0.055	2.24 0.036	2.39 0.022
0.309 (2.24)	8.90 *****	4.64 0.184	3.30 0.168	2.69 0.149	2.38 0.131	2.21 0.113	2.13 0.096	2.10 0.080	2.13 0.055	2.23 0.036	2.38 0.022
0.350 (1.86)	8.15 *****	4.26 0.183	3.05 0.165	2.51 0.147	2.23 0.128	2.09 0.109	2.02 0.093	2.00 0.078	2.05 0.053	2.17 0.034	2.32 0.021
0.400 (1.50)	7.29 *****	3.83 0.181	2.76 0.163	2.29 0.143	2.06 0.124	1.94 0.106	1.90 0.089	1.90 0.074	1.97 0.050	2.10 0.032	2.26 0.020
0.450 (1.22)	6.47 *****	3.42 0.179	2.49 0.160	2.09 0.140	1.89 0.120	1.81 0.102	1.78 0.086	1.79 0.071	1.88 0.047	2.03 0.030	2.20 0.018
0.500 (1.00)	5.67 *****	3.02 0.177	2.22 0.157	1.89 0.136	1.73 0.117	1.67 0.098	1.67 0.082	1.69 0.068	1.80 0.045	1.96 0.028	2.15 0.017

Table 2: DICHOTOMOUS CRITERION variable and α = .25

ϕ (t)	SDs Apart-- 0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
0.006	24.82	12.60	8.61	6.67	5.56	4.87	4.40	4.09	3.72	3.56	3.51
(160.)	*****	*****	*****	*****	*****	0.193	0.176	0.159	0.125	0.094	0.067
0.010	22.90	11.64	7.97	6.19	5.18	4.55	4.13	3.85	3.53	3.40	3.38
(99.0)	*****	*****	*****	*****	*****	0.189	0.172	0.155	0.120	0.089	0.062
0.023	19.56	9.97	6.85	5.36	4.51	3.99	3.65	3.43	3.19	3.12	3.14
(43.0)	*****	*****	*****	*****	0.200	0.182	0.164	0.145	0.110	0.079	0.054
0.050	16.30	8.34	5.77	4.54	3.86	3.45	3.19	3.02	2.87	2.85	2.91
(19.0)	*****	*****	*****	0.210	0.192	0.173	0.154	0.135	0.099	0.069	0.046
0.067	15.07	7.72	5.36	4.24	3.61	3.24	3.01	2.87	2.74	2.75	2.82
(14.0)	*****	*****	*****	0.208	0.189	0.169	0.150	0.130	0.095	0.066	0.043
0.100	13.31	6.84	4.77	3.80	3.26	2.95	2.76	2.65	2.57	2.60	2.69
(9.00)	*****	*****	0.222	0.204	0.184	0.163	0.143	0.124	0.089	0.060	0.039
0.150	11.46	5.92	4.15	3.33	2.89	2.64	2.49	2.42	2.38	2.44	2.56
(5.67)	*****	*****	0.218	0.199	0.177	0.156	0.135	0.116	0.082	0.055	0.035
0.159	11.19	5.78	4.06	3.27	2.84	2.59	2.46	2.38	2.36	2.42	2.54
(5.30)	*****	*****	0.218	0.198	0.176	0.155	0.134	0.115	0.081	0.054	0.034
0.200	10.06	5.22	3.69	2.98	2.61	2.41	2.29	2.24	2.24	2.33	2.46
(4.00)	*****	*****	0.215	0.194	0.172	0.150	0.129	0.110	0.076	0.050	0.032
0.250	8.91	4.64	3.30	2.70	2.38	2.21	2.13	2.10	2.13	2.23	2.38
(3.00)	*****	0.231	0.212	0.190	0.167	0.145	0.124	0.105	0.072	0.047	0.029
0.300	7.91	4.14	2.97	2.45	2.18	2.05	1.99	1.97	2.03	2.15	2.31
(2.33)	*****	0.229	0.208	0.185	0.162	0.140	0.119	0.100	0.068	0.044	0.027
0.309	7.75	4.06	2.92	2.41	2.15	2.02	1.96	1.95	2.01	2.14	2.29
(2.24)	*****	0.229	0.208	0.185	0.161	0.139	0.118	0.099	0.067	0.044	0.027
0.350	7.00	3.69	2.67	2.22	2.00	1.90	1.86	1.86	1.94	2.07	2.24
(1.86)	*****	0.227	0.205	0.181	0.157	0.135	0.114	0.095	0.064	0.041	0.025
0.400	6.14	3.26	2.38	2.00	1.83	1.75	1.73	1.75	1.85	2.00	2.18
(1.50)	*****	0.224	0.201	0.177	0.152	0.130	0.109	0.091	0.061	0.039	0.024
0.450	5.32	2.85	2.11	1.80	1.66	1.62	1.62	1.65	1.77	1.93	2.12
(1.22)	*****	0.222	0.197	0.172	0.147	0.125	0.105	0.087	0.058	0.037	0.022
0.500	4.52	2.45	1.84	1.60	1.50	1.48	1.50	1.55	1.69	1.87	2.06
(1.00)	0.240	0.218	0.193	0.167	0.142	0.120	0.100	0.083	0.054	0.034	0.021

Table 2: DICHOTOMOUS CRITERION variable and α = .33

ϕ	SDs Apart--										
(t)	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
0.006	23.26	11.82	8.09	6.28	5.25	4.61	4.18	3.89	3.56	3.43	3.40
(160.)	*****	*****	*****	*****	*****	0.257	0.236	0.214	0.169	0.127	0.090
0.010	21.34	10.86	7.45	5.80	4.87	4.29	3.91	3.65	3.37	3.27	3.27
(99.0)	*****	*****	*****	*****	0.273	0.252	0.230	0.207	0.162	0.120	0.084
0.023	18.00	9.19	6.33	4.97	4.20	3.73	3.43	3.23	3.04	2.99	3.03
(43.0)	*****	*****	*****	0.286	0.265	0.242	0.219	0.194	0.148	0.106	0.072
0.050	14.74	7.56	5.25	4.15	3.55	3.19	2.96	2.83	2.71	2.72	2.79
(19.0)	*****	*****	*****	0.278	0.255	0.230	0.205	0.180	0.133	0.093	0.061
0.067	13.50	6.94	4.83	3.84	3.30	2.98	2.79	2.67	2.59	2.61	2.71
(14.0)	*****	*****	0.297	0.275	0.250	0.225	0.199	0.173	0.127	0.088	0.057
0.100	11.75	6.06	4.25	3.41	2.95	2.69	2.54	2.45	2.41	2.47	2.58
(9.00)	*****	*****	0.293	0.269	0.243	0.216	0.190	0.164	0.118	0.080	0.051
0.150	9.90	5.14	3.63	2.94	2.58	2.38	2.27	2.22	2.23	2.31	2.45
(5.67)	*****	*****	0.287	0.262	0.234	0.206	0.179	0.153	0.108	0.072	0.046
0.159	9.63	5.00	3.54	2.88	2.53	2.33	2.23	2.19	2.20	2.29	2.43
(5.30)	*****	*****	0.287	0.260	0.232	0.204	0.177	0.152	0.106	0.071	0.045
0.200	8.50	4.44	3.17	2.59	2.30	2.15	2.07	2.05	2.09	2.20	2.35
(4.00)	*****	0.306	0.282	0.255	0.226	0.197	0.170	0.144	0.100	0.066	0.041
0.250	7.35	3.86	2.78	2.31	2.07	1.95	1.91	1.90	1.97	2.10	2.27
(3.00)	*****	0.303	0.277	0.248	0.219	0.190	0.162	0.137	0.094	0.061	0.038
0.300	6.35	3.36	2.45	2.06	1.87	1.79	1.76	1.78	1.87	2.02	2.19
(2.33)	*****	0.300	0.272	0.242	0.211	0.182	0.155	0.130	0.089	0.057	0.035
0.309	6.19	3.28	2.40	2.02	1.84	1.76	1.74	1.76	1.86	2.01	2.18
(2.24)	*****	0.300	0.271	0.241	0.210	0.181	0.154	0.129	0.088	0.057	0.035
0.350	5.43	2.90	2.14	1.83	1.69	1.63	1.63	1.66	1.78	1.94	2.13
(1.86)	*****	0.297	0.267	0.235	0.204	0.175	0.148	0.124	0.083	0.054	0.033
0.400	4.58	2.48	1.86	1.61	1.52	1.49	1.51	1.56	1.70	1.87	2.07
(1.50)	0.319	0.293	0.261	0.229	0.197	0.168	0.142	0.118	0.079	0.050	0.030
0.450	3.76	2.07	1.59	1.41	1.35	1.36	1.39	1.45	1.61	1.80	2.01
(1.22)	0.317	0.288	0.255	0.221	0.190	0.161	0.135	0.112	0.074	0.047	0.028
0.500	2.96	1.67	1.32	1.21	1.19	1.22	1.28	1.35	1.53	1.74	1.95
(1.00)	0.314	0.282	0.247	0.214	0.182	0.154	0.128	0.106	0.070	0.044	0.026

Table 2: DICHOTOMOUS CRITERION variable and α = .40

ϕ (t)	SDs Apart-- 0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50
0.006 (160.)	22.05 *****	11.21 *****	7.68 *****	5.98 *****	5.01 *****	4.40 0.316	4.01 0.291	3.74 0.264	3.44 0.211	3.33 0.159	3.32 0.113
0.010 (99.0)	20.13 *****	10.25 *****	7.04 *****	5.50 *****	4.63 0.334	4.08 0.310	3.73 0.284	3.50 0.256	3.25 0.201	3.17 0.150	3.18 0.105
0.023 (43.0)	16.79 *****	8.58 *****	5.93 *****	4.67 0.349	3.96 0.324	3.53 0.297	3.26 0.269	3.08 0.240	2.92 0.183	2.89 0.132	2.94 0.090
0.050 (19.0)	13.52 *****	6.95 *****	4.84 0.364	3.85 0.339	3.30 0.312	2.98 0.282	2.79 0.252	2.67 0.221	2.59 0.164	2.62 0.115	2.71 0.076
0.067 (14.0)	12.29 *****	6.33 *****	4.43 0.361	3.54 0.335	3.06 0.306	2.78 0.275	2.61 0.244	2.52 0.213	2.47 0.156	2.51 0.108	2.62 0.071
0.100 (9.00)	10.54 *****	5.46 *****	3.85 0.355	3.10 0.327	2.71 0.296	2.49 0.264	2.36 0.232	2.30 0.201	2.29 0.145	2.37 0.099	2.49 0.063
0.150 (5.67)	8.69 *****	4.53 0.375	3.23 0.348	2.64 0.317	2.34 0.284	2.18 0.251	2.10 0.218	2.07 0.187	2.11 0.132	2.21 0.088	2.36 0.056
0.159 (5.30)	8.42 *****	4.40 0.374	3.14 0.347	2.57 0.316	2.28 0.283	2.13 0.249	2.06 0.216	2.04 0.185	2.08 0.131	2.19 0.087	2.34 0.055
0.200 (4.00)	7.29 *****	3.83 0.371	2.76 0.342	2.29 0.309	2.06 0.274	1.94 0.240	1.90 0.207	1.90 0.176	1.97 0.123	2.10 0.081	2.26 0.050
0.250 (3.00)	6.14 *****	3.26 0.367	2.38 0.335	2.00 0.300	1.83 0.265	1.75 0.230	1.73 0.197	1.75 0.167	1.85 0.115	2.00 0.075	2.18 0.046
0.300 (2.33)	5.14 *****	2.76 0.362	2.05 0.328	1.75 0.292	1.63 0.255	1.59 0.220	1.59 0.188	1.63 0.158	1.75 0.108	1.92 0.070	2.11 0.043
0.309 (2.24)	4.97 0.389	2.67 0.361	1.99 0.327	1.71 0.290	1.59 0.254	1.56 0.219	1.57 0.186	1.61 0.157	1.73 0.107	1.90 0.069	2.10 0.042
0.350 (1.86)	4.22 0.387	2.30 0.357	1.74 0.320	1.52 0.283	1.44 0.246	1.43 0.211	1.46 0.179	1.51 0.150	1.66 0.101	1.84 0.065	2.04 0.040
0.400 (1.50)	3.37 0.384	1.87 0.351	1.46 0.312	1.31 0.274	1.27 0.237	1.29 0.202	1.34 0.170	1.41 0.142	1.57 0.095	1.77 0.061	1.98 0.037
0.450 (1.22)	2.55 0.380	1.46 0.343	1.18 0.303	1.11 0.264	1.11 0.227	1.15 0.193	1.22 0.162	1.30 0.135	1.49 0.089	1.70 0.057	1.92 0.034
0.500 (1.00)	1.75 0.375	1.06 0.334	0.92 0.293	0.91 0.254	0.95 0.217	1.02 0.184	1.11 0.154	1.20 0.127	1.41 0.084	1.64 0.053	1.87 0.032

Table 2: DICHOTOMOUS CRITERION variable and α = .50

ϕ (t)	SDs Apart-- 0.25	 0.50	 0.75	 1.00	 1.25	 1.50	 1.75	 2.00	 2.50	 3.00	 3.50
0.006 (160.)	20.43 *****	10.40 *****	7.14 *****	5.58 *****	4.69 0.430	4.13 0.404	3.78 0.374	3.54 0.342	3.28 0.276	3.19 0.211	3.20 0.151
0.010 (99.0)	18.51 *****	9.44 *****	6.50 *****	5.10 *****	4.30 0.425	3.81 0.396	3.50 0.365	3.30 0.332	3.09 0.264	3.03 0.198	3.06 0.140
0.023 (43.0)	15.17 *****	7.77 *****	5.39 *****	4.26 0.441	3.63 0.412	3.26 0.380	3.02 0.346	2.88 0.311	2.75 0.240	2.75 0.175	2.82 0.119
0.050 (19.0)	11.90 *****	6.14 *****	4.30 0.457	3.44 0.428	2.98 0.396	2.71 0.360	2.56 0.323	2.47 0.286	2.43 0.214	2.48 0.151	2.59 0.100
0.067 (14.0)	10.67 *****	5.52 *****	3.89 0.453	3.14 0.422	2.73 0.388	2.51 0.351	2.38 0.313	2.32 0.276	2.30 0.204	2.38 0.142	2.50 0.093
0.100 (9.00)	8.91 *****	4.64 0.474	3.30 0.446	2.70 0.412	2.38 0.375	2.21 0.337	2.13 0.298	2.10 0.259	2.13 0.188	2.23 0.129	2.38 0.083
0.150 (5.67)	7.06 *****	3.72 0.468	2.69 0.436	2.23 0.399	2.01 0.360	1.91 0.319	1.87 0.279	1.87 0.241	1.94 0.171	2.08 0.115	2.25 0.073
0.159 (5.30)	6.80 *****	3.59 0.467	2.60 0.435	2.17 0.397	1.96 0.357	1.86 0.316	1.83 0.276	1.83 0.238	1.92 0.169	2.06 0.113	2.23 0.071
0.200 (4.00)	5.67 *****	3.02 0.463	2.22 0.427	1.89 0.387	1.73 0.345	1.67 0.304	1.67 0.264	1.69 0.226	1.80 0.158	1.96 0.105	2.15 0.065
0.250 (3.00)	4.52 0.487	2.45 0.456	1.84 0.417	1.60 0.375	1.50 0.332	1.48 0.290	1.50 0.250	1.55 0.213	1.69 0.147	1.87 0.096	2.06 0.060
0.300 (2.33)	3.51 0.484	1.94 0.449	1.50 0.407	1.35 0.363	1.30 0.319	1.31 0.277	1.36 0.238	1.42 0.201	1.59 0.138	1.78 0.089	1.99 0.055
0.309 (2.24)	3.35 0.483	1.86 0.447	1.45 0.405	1.31 0.361	1.27 0.317	1.29 0.275	1.34 0.235	1.40 0.199	1.57 0.136	1.77 0.088	1.98 0.054
0.350 (1.86)	2.60 0.480	1.49 0.440	1.20 0.396	1.12 0.351	1.12 0.307	1.16 0.265	1.23 0.226	1.31 0.190	1.50 0.129	1.71 0.083	1.93 0.051
0.400 (1.50)	1.75 0.474	1.06 0.430	0.92 0.383	0.91 0.338	0.95 0.294	1.02 0.252	1.11 0.214	1.20 0.179	1.41 0.121	1.64 0.077	1.87 0.047
0.450 (1.22)	0.93 0.465	0.65 0.417	0.64 0.369	0.70 0.324	0.79 0.280	0.88 0.240	0.99 0.202	1.10 0.169	1.33 0.113	1.57 0.072	1.81 0.043
0.500 (1.00)	0.13 0.450	0.25 0.401	0.38 0.354	0.50 0.309	0.63 0.266	0.75 0.227	0.88 0.191	1.00 0.159	1.25 0.106	1.50 0.067	1.75 0.040